Olean Energy

Owners:

Danny & Josie Kluthe


OLean Energy
Owner: Danny Kluthe
2464 Road 17, Dodge, NE 68633
The Nebraska Environmental Trust
Nebraska Public Power District
Cuming County Public Power District
Contractors: Brabec Construction; Preister Well & Backhoe; Schmitt Construction; Walker Foundations; Bracht Electric: Howells Fabrication
Grants: Nebraska Environmental Trust
USDA Rural Development
Cost Share: Natural Resources Conservation Service
Financing: Dakota Mac
USDA Rural Development
Committed to the future of rural communities. This institution is an equal opportunity provider.
Colfax County

Digging the lagoon with 25 feet sidewalls began the project.

Final dimensions are 300 x 400.

The excavation is finished.

A liner is laid in place.
It’s strong enough to drive on as long as there are no sharp objects.

The digester created another large hole.

The 20 feet deep sidewalls required extensive shoring. The ramp was dug for truck access.

Hundreds of pounds of re rod was contained in the digester floor. The hole is for emergency pump out purposes.

A cement power boom transferred cement to the floor of the digester.

The floor under construction.

The sidewalls are ready to be poured.

The sidewalls are 14 feet tall, 10 inches wide and 80 feet across.

The final grade of the digester with the Genset building and Barn 6 in the background.

The hole on the far side is used for setting the depth of the manure.
The digester will hold 440,000 gallons of manure.

Manure and gas pipes go through the leer to the digester.

An 8 inch line carries manure to the digester.

The red pipe holds the mixer which runs at midnight for 1 hour. It mixes the manure and the bacteria which will break down the solids and produces methane gas.

Manure gravity flows from the barns through the white pipe.

Running an hour a day will put the entire mix into suspension.
3x3x1 blocks with 1 inch re rod hold down the piping.

Piping around the interior will heat the digester to 100 degrees and serve as a radiator for the engine. In the background is the Genset building.

The digester cover will be welded to this strip.

Insulation is installed on top of the 60 mil cover.

Then there is a 40 mil cover on top of the 60 mil cover with 4 inches of insulation sandwiched between.

The completed cover.

Gas production starts to lift the cover.
The lagoon is in the background.

Two new barns under construction brings the total to six.

A view from the road looking up at the barns.

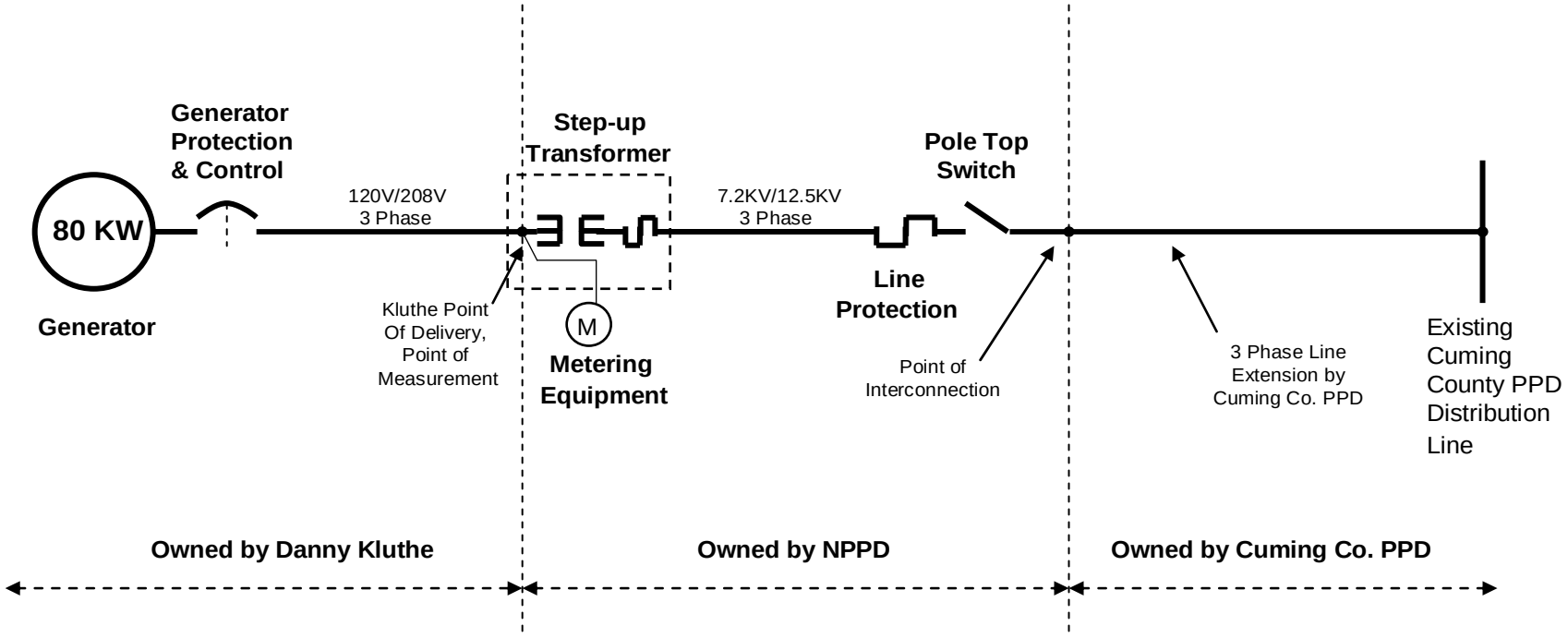
A clean-out tube is installed on the piping to the lagoon.

The large line handles the manure from the digester to the lagoon. 5 inches of water is returned to the barn pits after the manure is emptied.

The manure gravity flows from the pits to the digester.

Attachment C

KLUTHE METHANE RECOVERY PROJECT
Electrical One-Line Diagram



Electricity is sold to Nebraska Public Power. It flows to the distribution lines through this interconnection.

A transformer steps up the voltage to match the power grid.

A meter measures the energy produced.

A 3306 caterpillar engine runs on propane or methane.

Heat from the engine and muffler are captured in an exchanger, heating water that will keep the digester at 100 degrees. The pipes in the digester also serve as a radiator for the engine.

The generator, the engine, and the heat exchanger installed.

The Gentec is the brains of the operation. Starting and stopping the engine, it also senses the gas and idles the engine down to match gas output. At a digester temperature of 102 degrees water is diverted to a standard radiator.

The black pipes connect the heat exchanger to the digester. The red motor (center) pumps the water back and forth. If methane is detected inside the building, the gold colored valve (top right hand corner) shuts everything down.

The blue motor sucks the methane from the digester to the engine. In the center, the meter measures cubic feet of gas. In the top right hand corner, the regulators set the gas pressure to the engine.

Two black barrels filter the methane gas. On the wall is an air vent for the fan.

A fan changes 100% of the air in less than a minute.

Here is the radiator that will be used when the temperature in the digester is over 102 degrees.

In line pull gate valves located in a “Y” send the manure either to the digester or a line bypass going straight to the lagoon.

Senator Matt Conealy, Danny Kluthe, and Senator Arny Stuthman.

This is a bird’s eye view of Bacon Hill & OLean Energy.

The Partners of OLean Energy.